



# MISSOURI DEPARTMENT OF NATURAL RESOURCES

## Gasoline Contaminated Drinking Water in New Madrid County

Fact Sheet

3/2001

Division of Environmental Quality  
Public Drinking Water Program

Trace amounts of methyl tertiary butyl ether (MTBE), a chemical commonly associated with gasoline have been found in the drinking water served by New Madrid County Public Water Supply District #2. The Missouri Department of Natural Resources, the Missouri Department of Health and the New Madrid County Public Water Supply District #2 have prepared this fact sheet to answer your questions.

### **Who is affected by this contamination?**

New Madrid County Public Water Supply District #2 serves water to approximately 500 people who live in and around Kewanee in New Madrid County. Anyone who obtains drinking water from the water district is potentially affected. Kewanee is located about seven miles northwest of the city of New Madrid.

### **Is the water safe to drink?**

Based on current information, the level of contamination in the water is not expected to cause health problems. However, unpleasant tastes and odors may be noticed if the contaminant level increases.

### **Would it help to boil my water?**

No. Boiling the water will not significantly reduce overall exposure. Heating the water may cause the contaminants to volatilize out of the water, which could raise the potential for inhalation exposure.

### **Is it safe for other uses, such as bathing and washing clothes?**

Yes. However, if gasoline or turpentine-like odors are noticed, adequate ventilation should be provided by turning on a vent fan, opening a window or other means.

### **What concentration of this contaminant makes water unsafe for drinking?**

There are currently no federal or state drinking water standards for MTBE. However, the Missouri Department of Health has recommended that, for long-term (lifetime) exposure, the concentration should not exceed 20 parts per billion (ppb). The Department of Health has further indicated that, for short-term exposure, public health is protected as long as the concentration does not exceed 400 ppb. This level can be used as a guideline during the period required for the water district to obtain an alternative water supply. Current levels in the drinking water of New Madrid County Public Water Supply District #2 are well below these recommended limits. It

PUB002094



should be noted that experts believe most individuals would detect a turpentine-like taste and odor in their drinking water long before the levels become high enough to cause short-term adverse health effects.

## **How much MTBE is in the water?**

MTBE has been found at concentrations ranging from 5.8 to 8.5 parts per billion (ppb) in samples from the New Madrid County Public Water Supply District #2 water system. The contamination was first discovered in a routine sample collected from the water treatment plant on Oct. 24, 2000. The test results for that sample and subsequent samples, all taken at the water treatment plant, are shown below:

- Oct. 24, 2000 6.0 ppb
- Nov. 21, 2000 5.8 ppb
- Jan. 16, 2001 7.8 ppb
- Jan. 30, 2001 8.5 ppb
- Feb. 13, 2001 7.6 ppb
- Feb. 20, 2001 8.0 ppb
- Feb. 27, 2001 9.2 ppb

## **What are these contaminants?**

Gasoline contains several volatile organic chemicals including benzene, ethylbenzene, toluene, xylene and MTBE. The only contaminant found so far in the drinking water supplied by New Madrid County Public Water Supply District #2 is MTBE. However, MTBE moves through soils and groundwater faster than other gasoline components, and its detection may indicate that the leading edge of a gasoline contamination plume has reached the water district's well. If so, it is possible other gasoline components may show up in the future.

MTBE is a chemical added to some gasoline products since 1979 as an octane enhancer and to promote more complete combustion and reduce toxic emissions. MTBE adds oxygen to gasoline, which increases the temperature at which it burns in engines and reduces the amount of harmful byproducts in the vehicle's exhaust. Because it mixes readily with gasoline, is easily transported, has a low production cost and has a high octane rating. MTBE has become the oxygenate of choice for most gasoline producers. Conventional gasoline has MTBE at levels around 2 percent by volume, though some premium blends can have MTBE at levels up to about 8 percent.

## **What health effects are caused by this contaminant?**

Data is limited, and there are uncertainties about the human health effects caused by drinking MTBE-contaminated water. Because of the strong taste and odor of MTBE, it is unlikely that people would drink water with concentrations of MTBE sufficient to cause serious health effects. In laboratory tests on animals, cancer and non-cancer effects, including blood chemistry changes and kidney abnormalities, occurred at high levels of exposure. Because the animals were exposed through pathways other than consumption of water, there are significant uncertainties about the degree of risk associated with human exposure to low concentrations typically found in drinking water.

## **How do these contaminants get into the water?**

Chemicals associated with gasoline typically enter groundwater as a result of leakage from gasoline storage tanks and associated piping; overfill and spills at gasoline stations; leakage from pipelines, landfill sites and dumps; spillage at industrial and refueling facilities; accidental spills during transport; storm water runoff; and atmospheric deposition (very low levels). Occur-

rence of MTBE in drinking water appears to be linked to gasoline storage tanks more often than not. MTBE does not readily attach to soil particles, is not easily biodegraded and is very soluble in water. These characteristics allow MTBE to move through the soil and into groundwater very quickly.

## **What is being done now?**

New Madrid County Public Water Supply District #2 is working with the Department of Natural Resources to fully evaluate the situation and determine the best available solution. Possible solutions include constructing a new well in another area to provide a source of uncontaminated water, purchasing water from another public water system or installing a treatment system to remove MTBE and other potential gasoline components from the water.

The department's Hazardous Waste Program has approved a method of cleanup that removes the contamination from the water table and soil by using a vacuum enhanced recovery system. This technology pulls air through the soils to vaporize the contaminants and enhance natural degradation of gasoline in soils.

Steps are also being taken to identify and, if possible, eliminate the source or sources of contamination. Likely potential sources of MTBE include underground or aboveground gasoline storage tanks in the vicinity of the well. The department has ordered two neighboring businesses that store gasoline to immediately begin investigating to determine whether they have leaking tanks that may be contributing to the contamination.

The Department of Natural Resources will sample the drinking water every week to closely track the levels of contamination in the well and in the public water system. Results of that testing will be published periodically and will also be available from the water district or the Department of Natural Resources.

## **How long has the problem existed?**

MTBE was first detected in routine samples collected Oct. 24, 2000, from New Madrid County Public Water Supply District #2. The last routine sample prior to this was collected on Oct. 1, 1997, and it had no detects of MTBE or other gasoline components. Contamination of the water district well apparently occurred sometime between those two sampling events.

## **How long will it be before the problem is cleared up?**

A solution and the time required to implement that solution depend on the sources of contamination and the availability of resources to address the problem. The department's Hazardous Waste Program has initiated emergency site characterization and cleanup activities. Unfortunately, a significant amount of gasoline has been released over a long period of time and cleaning up the site will also take a considerable amount of time. The department's top priority is to ensure that the customers of the water district have safe drinking water. Because polluters are responsible for the cleanup, their willingness and ability to address the problem can influence how quickly the cleanup is ultimately completed.

## **Do people who have private wells in the area also have cause for concern?**

If your well is in proximity to the New Madrid County Public Water Supply District #2 well, which is located in Kewanee, or if you have experienced a change in the taste and odor of your water, you may want to have your water tested. Please contact the Department of Health at 1-800-392-7245 to arrange testing.

For more information on the gasoline contamination of New Madrid County Public Water Supply District #2's drinking water, please call the Missouri Department of Natural Resources' Public Drinking Water Program at 1-800-361-4827 or (571) 751-5331, or the Missouri Department of Health at 1-800-392-7245. Visit the department's MTBE Web page at [www.dnr.state.mo.us/mtbe](http://www.dnr.state.mo.us/mtbe).

For more information call or write  
Missouri Department of Natural Resources  
Public Drinking Water Program  
P.O. Box 176, Jefferson City, MO 65102-0176  
1-800-361-4827 or (573) 751-5331 office  
(573) 751-3110 fax  
[www.dnr.state.mo.us/deq/pdwp](http://www.dnr.state.mo.us/deq/pdwp)